

## **ABSTRACT OF THE DISCLOSURE**

A method of allocating resources in the presence of uncertainty is presented. The method builds upon deterministic methods and initially creates and optimizes scenarios. The invention employs clustering, line-searching, statistical sampling, and unbiased approximation for optimization. Clustering is used to divide the allocation problem into simpler sub-problems, for which determining optimal allocations is simpler and faster. Optimal allocations for sub-problems are used to define spaces for line-searches; line-searches are used for optimizing allocations over ever larger sub-problems. Sampling is used to develop Guiding Beacon Scenarios that are used for generating and evaluating allocations. Optimization is made considering both constraints, and positive and negative ramifications of constraint violations. Applications for capacity planning, organizational resource allocation, and financial optimization are presented.

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